(**Adopted:** 12/20/93; **Amended:** 10/26/94)

RULE 1160
Internal Combustion Engines

(A) General

(1) Purpose: The purpose of this rule is to establish limits for emissions associated with emergency, portable, standby, or stationary internal combustion engines.

(2) Applicability: This rule is applicable to any stationary internal combustion engine rated at 500 or more brake horsepower (bhp), when located within the Federal Ozone Non-attainment Area.

(B) Definitions

For the purposes of this rule, the following definitions shall apply:

(1) *"Aggregate Emissions":* A facility-wide sum of actual emissions, on an emissions category specific basis, from engines subject to this rule operated at a single facility. Such "aggregating" of emissions will include all regulated emissions categories subject to this rule.

(2) *"Baseline Emission Rate":* Emissions under normal operating conditions, prior to control, determined by an emissions compliance test conducted in accordance with the requirements specified in Section (F). The baseline emissions shall be adjusted to reflect any operational limit or control equipment installed prior to January 1, 1991.

(3) *"Diesel-Cycle Engine":* A two or four stroke compression ignition engine that is operated on any liquid or gaseous fuel, and with an exhaust stream oxygen concentration of four percent by volume or greater.

(4) *"Emergency Internal Combustion Engines":* For purposes of this rule, internal combustion engines used during periods of loss of commercial power at facilities normally serviced with commercial power. These units are normally operated during periods of compliance and operational preparedness testing (1 hr/wk) and during periods of actual power loss.

(5) *"Emissions Compliance Test":* An emissions compliance test conducted in accordance with a District approved test protocol pursuant to the District's Compliance Test Procedural Manual.

(6) *"Emission Control Plan":* A document which outlines how an existing facility will comply with the requirements of this rule.

(7) *"Engine Rating":* The output of an engine as determined by the engine manufacturer and/or listed on the nameplate of the unit, regardless of any derating.

(8) *"Federal Ozone Non-attainment Area":* That portion of San Bernardino County that lies within the lines which begin at: (a) the San Bernardino - Riverside County boundary, running north along the range line common to Range 3 East and Range 2 East; (b) then west along the township line common to Township 2 North and Township 3 North; (c) then north along the San Bernardino - Los Angeles County Boundary and the San Bernardino - Kern County Boundary; (d) then east along latitude 35 degrees, 10 minutes north; (e) then south along longitude 115 degrees, 45 minutes west, and west along the San Bernardino - Riverside County Boundary (see Map 1).

(9) *"Lean-burn Engine":* A spark-ignited engine that is operated with any liquid or gaseous fuel and with an exhaust stream oxygen concentration of four percent by volume, or greater.

(10) *"Portable Engines":* Engines which are operated at one site, but not permanently affixed to only one location. Portable equipment includes internal combustion engines which are transportable and may be mounted on mobile sources, trailers, skids, or other platforms.

(11) *"Rich-burn Engine":* A spark ignited engine that is operated with any liquid or gaseous fuel, and with a exhaust stream oxygen concentration of less than four percent by volume.

(12) *"Standby Engine":* Any internal combustion engine which operates as a mechanical or electrical power source as a temporary replacement for a primary power source during periods of fuel/energy shortage or while the primary power source is undergoing maintenance or repairs.

(13) *"Internal Combustion Engine":* Any spark or compression ignited reciprocating stationary internal combustion engine that is attached to a foundation at a location, or is portable and operated at a location for more than 90 days in any consecutive twelve month period, excluding engines used for self propulsion of a vehicle.

(14) *"Volatile Organic Compound" :* Any compound containing at least one atom of carbon, except for the following compounds: ethane, methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and those compounds listed in 40 CFR 51.100(S)(1).

(C) Requirements

(1) Emissions Standards

(a) VOC Emissions - internal combustion engines subject to this rule shall not exceed 106 ppmv* of Volatile Organic Compounds (VOCs), except for:

(i) internal combustion engines at Southern California Gas Newberry Springs facility shall not exceed 255 ppmv* of VOCs.

(b) NOx Emissions - internal combustion engines subject to this rule shall not exceed the following emission standards, unless opting for the alternative NOx emissions compliance strategy:

(i) Rich-burn Engines:

Oxides of Nitrogen (NOx)	50 ppmv*
Carbon Monoxide (CO)	4500 ppmv*

(ii) Lean-burn Engines:

Oxides of Nitrogen (NOx)	140 ppmv*
Carbon Monoxide (CO)	4500 ppmv*

(iii) Diesel-cycle Engines:

Oxides of Nitrogen (NOx)	700 ppmv*
Carbon Monoxide (CO)	4500 ppmv*

*All ppmv limitations shall be referenced at 15 percent volume stack gas oxygen measured on a dry basis and averaged over 15 consecutive minutes.

(2) Alternative Compliance Strategy - NOx Emissions Only

The VOC and CO standards continue to apply when the alternative NOx emissions compliance strategy is selected by the permittee in consultation with the District. For NOx emissions only, the alternative strategy is a specified minimum percent reduction in emissions of NOx from the baseline emissions rate. Engines subject to this rule, opting for the alternative compliance strategy, shall achieve at least the following minimum reductions:

(a) Rich-burn Engines
not less than an 90 percent reduction of NOx emissions from the baseline emission rate

(b) Lean-burn Engines
not less than an 80 percent reduction of NOx emissions from the baseline emission rate

(c) Diesel-cycle Engines
not less than a 30 percent reduction of NOx emissions from the baseline emission rate

Following the baseline emission rate determination for each engine subject to this rule, the choice of which emission compliance standard shall apply, shall be made on a case-by-case basis by the District in consultation with the permittee. When such a determination is made, the Authority To Construct/Permit To Operate (ATC/PTO) shall thereafter contain specific enforceable operating conditions which will ensure compliance with the selected standard/limit.

The percent reduction as measured across the control device or relative to the baseline emission rate of each permit unit shall be determined on an emission rate basis. A permittee may petition the District to be allowed to "aggregate" the engine emissions facility-wide by submitting an Emission Control Plan. The District may approve the facility's Emission Control Plan, pursuant to subsection (C)(4), on a case-by-case basis.

(3) Demonstrated Engine Efficiency Alternative

For engines subject to this rule with a demonstrated efficiency greater than 30 percent, the following procedure may be used to determine the alternate allowable emissions limit. Each emission limit expressed in subsection (C)(1) may be multiplied by the engine efficiency, "E", divided by the reference efficiency of 30 percent. Engine efficiency shall be determined by using one of the following two methods, whichever is lower:

(a) $$E = \frac{(3413\ \text{BTU/kW-Hr})(100)}{\text{Actual Heat Rate at HHV of fuel (BTU/kW-Hr)}}$$

When the demonstrated percent efficiency applies to the engine only (without consideration of any downstream energy recovery), the data and calculation shall be averaged over 15 consecutive minutes and measured within 30 days of the first emissions compliance test. The actual heat rate in Btu/kW-hr (which can be converted to Btu/hp-hr by dividing by 1.34 according to the following formula), shall be measured at peak load for each applicable engine.

$$\frac{\text{(BTU/kwhr)}}{(1.34)} = \text{(BTU/bhp-hr)}$$

(b) $E = \frac{\text{(Mfg Rated Efficiency [Continuous] at LHV)(LHV)}}{\text{(HHV)}}$

Engine efficiency shall not be less than 30 percent. An engine with less than a 30 percent efficiency, shall be assigned an efficiency of 30 percent for the purpose of this rule.

(4) Emission Control Plan

(a) An Emission Control Plan shall be required for those facilities that:

(i) Elect to petition the District for the purpose of aggregating internal combustion engine emissions in order to comply with emissions reduction limitations under the percent reduction option in subsection (C)(2); or

(ii) Cannot meet the requirements in subsection (G)(1) - Compliance Schedule and intend to justify a claim of impracticability per subsection (G)(2).

(b) All affected internal combustion engines within the facility shall be addressed within the Emission Control Plan. Each engine shall be identified as to which option for emissions compliance applies, i.e. the per engine ppmv limit, the per engine adjusted ppmv limit, or the per engine percent reduction limit. The specific designation shall be recorded onto the ATC/PTO along with any specific operating limits or emissions limits pertaining to the specific engine, as enforceable permit conditions.

(c) The Emission Control Plan shall be approved by the Air Pollution Control Officer (APCO) in writing. For new engines and modifications to existing engines, the Emission Control Plan shall be submitted to and approved by the District prior to issuance of the ATC/PTO. The owner/operator may petition in writing for a change to the Emission Control Plan at any time.

(d) The Emission Control Plan shall include the following (if applicable):

(i) An explanation of why installation of NOx and VOC control technology cannot be achieved by May 31, 1995; and a schedule that demonstrates compliance with subsections (C)(1) or (C)(2) by the earliest practicable date.

(ii) The manufacturer, model number, unit identification (e.g. serial) number, rated horsepower, and combustion method (i.e., rich-burn or lean-burn or diesel) of each engine and the fuel type;

(iii) A description of the emissions control system installed on the engine (if any), including unit identification (e.g. serial) number, type (e.g., nonselective catalyst, "clean-burn" combustion, etc.) and manufacturer, as well as a description of any ancillary equipment related to the control of emissions (e.g., automatic air/fuel ratio controller, fuel valves, etc.). The operator shall notify the District of any replacement of such device(s) and the new serial or identification numbers.

(iv) The facility, company, Permit to Operate numbers and the location of the engine by a schematic of the affected facilities.

(v) A specific emission inspection procedure for each engine to ensure that the engine is operated in strict accordance with the manufacturer's specifications and in continual compliance with the provisions of this rule.

(vi) The procedure shall include an operator's inspection schedule.

(D) Exemptions

The provisions of this rule shall not apply to:

(1) All internal combustion engines rated at less than 500 brake horsepower.

(2) All internal combustion engines operated less than 100 hours within any continuous four consecutive calendar quarter period.

(3) Emergency internal combustion engines.

(4) All internal combustion engines located outside the Federal Ozone Non-attainment Area.

Any facility claiming any of the above exemptions shall maintain records in the manner prescribed by the APCO to provide documentation for compliance determination.

(E) Monitoring and Records

(1) Monitoring

(a) Operator's of internal combustion engines subject to this rule shall conduct their inspections, which ever is the more frequent of, at least every calendar quarter or after every 2,000 hours of engine operation . In no event shall the frequency of inspection be less than once per year

(b) Compliance shall be verified at least once in every 12 months, unless otherwise specified by the District, by an emissions compliance test. At a minimum, emissions compliance testing shall be conducted for NOx, VOC, CO and O_2 levels in compliance with the provisions of the District's Compliance Test Procedural Manual.

(2) Recordkeeping Requirements

The operator of any engine subject to the provisions of Section (C) of this rule shall maintain a log for each engine containing, at a minimum, the following data:

(a) District ATC/PTO number, unit identification number and emissions control device identification number, when applicable.

(b) Quarterly fuel use and quarterly hours of operation, on a calendar quarter basis.

(c) The date and a summary of any emissions corrective maintenance taken.

(d) Any additional information required in the facility's District approved Emission Control Plan, when applicable.

(e) The operator shall maintain the logs on site for a period of 2 years after the date of each entry. The log shall be provided to the District upon request.

(F) Test Methods

(1) NOx emissions for compliance tests shall be determined by EPA Method 7E.

(2) CO emissions for compliance tests shall be determined by using EPA Method 10.

(3) The measurement of VOC emissions subject to Section (E) of this rule shall be conducted in accordance with EPA Methods 18, 25 and/or 25A (40 CFR 60, Appendix A) as they exist on (date of adoption) and test procedures should be performed in accordance with a protocol approved by the APCO.

(4) Oxygen content for compliance tests shall be determined by using EPA Method 3A.

(5) Determination of the exempt compounds, shall be performed in accordance with ASTM Test Method D 4457-85 (Solvents and Coatings) and be consistent with the provisions set forth in the Federal Register (FR, Vol. 56, No. 52, March 18, 1991). Perfluorocarbon compounds shall be assumed to be absent from a product or process unless a manufacturer or facility operator identifies a specific

compound or compounds from the broad classes of perfluorocarbons listed in 40 CFR 51.100(S)(1) as being present in the product or process. When such compounds are identified, the facility shall provide the test method to determine the amount(s) of the specific compound(s).

(G) Compliance Schedule

The owner or operator of permit units subject to this rule shall fulfill the following increments of progress for permit units located in the Federal Ozone Non-attainment Area:

(1) If a facility files an Emission Control Plan:

(a) for ICEs of 1000 bhp and larger, the plan shall be submitted to the District not later than January 1, 1995.

(b) for ICEs of 500 bhp and larger, but less than 1000 bhp, the plan shall be submitted to the District not later than March 15, 1995.

(2) Install control technology that meets the NOx, VOC, and CO emission standards in (C)(1) or (C)(2) no later than May 31, 1995, unless such installation was justified to be impracticable in the Emission Control Plan.

(3) For those permit units for which installation by May 31, 1995 is not practicable, the Emission Control Plan shall demonstrate that actual control technology shall be installed by the following dates.

(a) Southern California Gas (Newberry Springs Facility)

Southern California Gas shall complete installation of VOC and NOx control technology on the following internal combustion engines according to the following schedule:

Engine 1	November 3, 1995
Engine 2	July 12, 1996
Engine 3	March 8, 1996
Engine 4	May 3, 1996
Engine 5	November 22, 1996
Engine 6	January 17, 1997

(b) Pacific Gas and Electric (Hinkley Facility)

PG&E shall complete installation on at least the following percentages of installed engine horsepower at the site, for both VOC and NOx control technology, according to the following schedule.

30 percent of installed horsepower	November 30, 1996
50 percent of installed horsepower	June 30, 1997
Complete installation on all engines	June 30, 1998

(4) Demonstrate final compliance with all applicable standards and requirements of the rule within six months of installation of the emission control technology.

[SIP: Approved: 11/1/96. 61 FR 56470, 40 CFR 52.220(c)(207)(I)(D)(3)]